What is claimed is:

1. A test and measurement instrument, comprising:

circuitry for entering parameters to be used to detect violations of predetermined parameters;

a data acquisition unit for acquiring a signal on a first channel;

processing circuitry for processing said signal;

display circuitry for displaying a waveform representation of said signal;

a reference memory for storing a first reference waveform;

comparing circuitry for repeatedly comparing said stored first reference waveform to portions of said signal for detecting the existence of one of said violations by moving said reference waveform along said signal in time; and

circuitry for alerting a user when one of said violations is detected.

2. The test and measurement instrument of claim 1, wherein:

said comparison between said signal and said stored waveform occurs in real time as the signal is acquired.

3. The test and measurement instrument of claim 2, wherein

said reference memory stores a second reference waveform; and

said comparing circuitry repeatedly compares said first and second reference waveforms to said portions of said signal for detecting one of said violations.

4. The test and measurement instrument of claim 3, further including:

circuitry for selecting portions of a reference signal under user control, and storing a first selected portion in said reference memory as said first reference waveform, or storing a second selected portion in said reference memory as said second reference waveform, or both.

5. The test and measurement circuitry of claim 1, wherein:

said predetermined parameters are defined by a user in terms of number of active gates, gate position, gate width, and tolerance.

6. The test and measurement instrument of claim 1, further including:

a signal memory for storing a long record length signal; and

said signal is a long record length stored signal, and said comparison is a comparison between said long-record length stored signal and said waveform occurring as said long record length signal is read out from said signal memory.

7. The test and measurement instrument of claim 4, wherein

said reference memory stores a second reference waveform; and

said comparing circuitry repeatedly compares said first and second reference waveforms to said portions of said long-record length stored signal for detecting one of said violations.

8. The test and measurement instrument of claim 1, wherein said reference wave form is defined by positioning a gate on a reference signal, and said gate is positioned by user adjustment of a gate positioning control displayed on said display screen.

9. The test and measurement instrument of claim 8, wherein said gate positioning control is a slider control displayed on said display screen.

10. A method for comparing a stored waveform to a received signal, comprising the steps of:

entering parameters to be used to detect violations of predetermined parameters;

acquiring a signal on a first channel;

processing said signal in processing circuitry;

displaying a waveform representation of said signal on a display device;

storing a first reference waveform in a reference memory;

repeatedly comparing said stored first reference waveform to portions of said signal for detecting the existence of one of said violations by moving said reference waveform along said signal in time; and

alerting a user upon detecting one of said violations.

11. The method of claim 10, wherein:

said step of repeatedly comparing occurs in real time as said signal is acquired.

12. The method of claim 11, further comprising the steps of:

storing a second reference waveform in said reference memory; and

repeatedly comparing said first and second reference waveforms to said portions of said
signal for detecting one of said violations.

13. The method of claim 12, further including:

circuitry for selecting portions of a reference signal under user control, and storing a first
selected portion in said reference memory as said first reference waveform, or storing a second
selected portion in said reference memory as said second reference waveform, or both.

14. The method of claim 10, wherein:

said predetermined parameters are defined by a user in terms of number of active gates,
gate position, gate width, and tolerance.

15. The method of claim 10, further including the steps of:

storing said signal in a long record length signal memory, said signal being a long
record length signal;

reading out said long record length signal from said signal memory; and

repeatedly comparing successive portions of said long record length stored signal to said
waveform to detect one of said violations.

16. The method of claim 15, further including the steps of:

storing a second reference waveform in said reference memory; and

repeatedly comparing said first and second reference waveforms to said successive
portions of said long record length stored signal to detect one of said violations.

17.   The method of claim 8, and further including the step of:

positioning a gate on a reference signal to define said reference wave form, said gate
being positioned by user adjustment of a gate positioning control displayed on said
display screen.